NIDDK and the Nobel Prize

The NIDDK has supported a number of winners of the world's greatest scientific honor—the Nobel Prize. These include extramural scientists at universities and other research institutions across the country who have been supported by NIDDK (Institute grantees), as well as scientists within NIDDK's Intramural Research Program.

1950s

1956
Institute grantee **Dr. Dickinson W. Richards, Jr.** shared the Nobel Prize in Physiology or Medicine with two other scientists. They developed heart catheterization techniques to study and diagnose circulatory disorders.

1959
Dr. Arthur Kornberg, a former Institute intramural researcher, and Institute grantee **Dr. Severo Ochoa** shared the Nobel Prize in Physiology or Medicine for discovering, respectively, the mechanisms of DNA and RNA synthesis.

1960s

1962
Institute grantee **Dr. James D. Watson** received the Nobel Prize in Physiology or Medicine along with two other scientists for discovering that DNA's structure is a double helix. This was a landmark finding of the 20th century, and it opened the field of modern genetics.

Institute grantee **Dr. John Kendrew** shared the Nobel Prize in Chemistry. He discovered the molecular structure of myoglobin, a form of the blood protein hemoglobin found in muscle.

1965
Institute grantee **Dr. Robert B. Woodward** won the Nobel Prize in Chemistry for his contributions to the art of organic synthesis. Among the many compounds he synthesized were quinine, cholesterol, cortisone, and chlorophyll.

1966
Institute grantee **Dr. Charles B. Huggins** shared the Nobel Prize in Physiology or Medicine for discoveries concerning the hormonal treatment of prostate cancer.

1968
Dr. Marshall W. Nirenberg and two other scientists shared the Nobel Prize in Physiology or Medicine for deciphering the genetic code and explaining how it functions in protein synthesis. Nirenberg's code-cracking work was done while he was an Institute intramural scientist.

1970s

1971
Institute grantee **Dr. Earl W. Sutherland, Jr.** won the Nobel Prize in Physiology or Medicine for his findings on the mechanisms of hormone action. His work greatly advanced the field of endocrinology.

1972
Dr. Christian B. Anfinsen shared the Nobel Prize in Chemistry with two other researchers. Anfinsen used the enzyme ribonuclease to show that a protein's amino acid sequence determines its three-dimensional structure, thus demonstrating a basic principle of biology. The award-winning work was done when Anfinsen was in the Institute's Laboratory of Chemical Biology.

Institute grantee **Dr. Gerald M. Edelman** shared the Nobel Prize in Physiology or Medicine for studies of the chemical structure of antibodies that led to a better understanding of the immune system.

1976
Former Institute researcher **Dr. Baruch S. Blumberg** and another NIH scientist received the Nobel Prize in Physiology or Medicine. They were cited for discoveries of new mechanisms for the origin and dissemination of infectious diseases. Blumberg found the hepatitis B virus protein, or "Australia antigen," in 1963 while at the Institute. This advance was a scientific and clinical landmark in the detection and control of hepatitis.

1977
Institute grantees **Dr. Roger C. L. Guillemin** and **Dr. Andrew V. Schally** shared the Nobel Prize in Physiology or Medicine with a third scientist. Guillemin and Schally's prizes were for discoveries related to the brain's production of peptide hormones.

1980s

1980
Institute grantee **Dr. Walter Gilbert** shared the Nobel Prize in Chemistry for his contributions to determining base sequences in DNA.

1984
Institute grantee **Dr. R. Bruce Merrifield** won the Nobel Prize in Chemistry for development of solid-phase peptide synthesis.

1985
Former Institute intramural researcher **Dr. Michael S. Brown** shared the Nobel Prize in Physiology or Medicine with another former NIH scientist for studies on cholesterol metabolism regulation that have led to new treatments for atherosclerosis.

Institute grantee **Dr. Herbert A. Hauptman** shared the Nobel Prize in Chemistry for creating methods to determine crystal structures. The methods advanced the development of practical instruments for learning the three-dimensional shape of molecules.

1989
Former Institute intramural researcher **Dr. Harold E. Varmus** shared the Nobel Prize in Physiology or Medicine with another former NIH scientist. They demonstrated that oncogenes, genes capable of converting normal cells into cancerous ones, can arise from normal cellular genes. Varmus later served as NIH Director.

1990s

1990
Institute grantee **Dr. E. Donnall Thomas** shared the Nobel Prize in Physiology or Medicine with another NIH grantee for pioneering transplant therapy. Thomas' early advances in bone marrow transplantation have aided patients with leukemia and many other diseases.

1992
Institute grantees **Dr. Edmond H. Fischer** and **Dr. Edwin G. Krebs** received the Nobel Prize in Physiology or Medicine for their studies of the regulation of cell activities by enzymes. They discovered protein kinases, enzymes that control basic activities of the cell by adding phosphate groups to proteins.

1994
Dr. Martin Rodbell shared the Nobel Prize in Physiology or Medicine with an NIH grantee for their discovery of G proteins and their role in signal transduction in cells. Rodbell made many of his key findings in the 1970s while an Institute intramural scientist.

1997
Institute grantee **Dr. Paul D. Boyer** shared the Nobel Prize in Chemistry for discovering how the enzyme ATP synthase drives the formation of ATP, the carrier of energy for cells in all living things.

1998
Institute grantee **Dr. Ferid Murad** shared the Nobel Prize in Physiology or Medicine with two other scientists for work demonstrating that the gas nitric oxide plays a role as a signaling molecule in the cardiovascular system.

2000s

2003
Dr. Peter Agre shared the Nobel Prize in Chemistry with another scientist for studies of channels in cell membranes. Agre discovered aquaporins, proteins that move water molecules through the cell membrane.

2004
Long-time grantees **Dr. Irwin A. Rose** and **Dr. Avram Hershko** shared the Nobel Prize in Chemistry with another scientist for the discovery of ubiquitin-mediated protein degradation inside the cell. Later work by this team brought to light insights into the ways that ubiquitin-mediated protein degradation contributes to cellular metabolism in general, as well as other roles of the ubiquitin protein.

Dr. Richard Axel, who was once an intramural research fellow under Dr. Gary Felsenfeld at the NIDDK, shared the Nobel Prize in Physiology or Medicine with another scientist. The pair discovered a large family of receptors selectively expressed in cells that detect specific odors. These receptors were later shown to be the cell surface molecules that bind specific odorants, which is the first step in their detection and identification.

2007
Institute grantee **Dr. Oliver Smithies** shared the Nobel Prize in Physiology or Medicine with two other scientists for the discoveries of principles for introducing specific gene modifications in mice by the use of embryonic stem cells, more commonly referred to as "gene targeting" or "gene knockout."